REMARKS

Claims 1, 2, 4, 5, 7, 9–11, 13–19, 22–24, 76, 78, 80, 82, and 83 are pending.

Rejection of claims under 35 U.S.C. § 102

Independent claim 82 is rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,780,368 to Liu et al. ("Liu"). Liu appears to describe a freeform fabrication method for fabricating a 3-D multi-material or multi-color object from successive layers of a primary body-building powder.

The Examiner relies on Liu to teach all of the elements of independent claim 82. In the Amendment and Response filed January 3, 2008 ("previous Response"), Applicants explained that Liu does not apply at least one of an ultraviolet light, a visible light, or an electron beam on the printed layer to induce a non-aqueous fluid to solidify, as required by claim 82. Also, Liu does not seem to teach or suggest applying a non-aqueous fluid to activate thermoplastic particles and applying an energy source to induce the non-aqueous fluid to solidify, as also recited in claim 82. Rather, Liu appears to disclose applying an energy source to either cure or harden a powder including a resin composition or to fuse a lower-melting material to become a liquid that is subsequently cooled to become a solid. *See* column 7, lines 8–17.

In the instant Office action, apparently relying on language in column 19 of Liu, the Examiner states that Liu discloses applying energy means to fuse the binder powder, allowing the resulting fused binder fluid to permeate downward through the particles. The Examiner further states that once permeated through a layer of powder, the binder fluid can be cooled down and solidified.

This characterization of Liu actually underscores the differences between Liu and claim 82. In other words, the Examiner explains that Liu first creates a binder fluid by applying energy means, and then solidifies the material by cooling the temperature. In stark contrast, claim 82 requires first applying a fluid to a film of particles and then applying an energy means to induce the fluid to solidify.

Moreover, as summarized in Figure 3 of Liu and related text, Liu does not teach or suggest applying a non-aqueous fluid to a film of particles. Rather, Liu selectively deposits a binder powder image and then fuses it with a UV source.

Applicants respectfully submit that claim 82 is patentable over the cited art for at least these reasons.

Claims 76, 78, 80, and 83 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,649,077 to Lauchenauer ("Lauchenauer"). Lauchenauer appears to disclose a heat activatable adhesive formed from at least two components, each in the form of discrete flowable particles. *See* abstract of Lauchenauer. An auxiliary agent may be incorporated, the agent being capable of strongly swelling or even dissolving at least one of the interacting components, this auxiliary agent being released or activated only when proper heat and/or pressure is applied to the conglomeratic material. *See* column 5, lines 20 – 25, emphasis added. The Examiner relies on Lauchenauer to teach all of the limitations of independent claims 76, 78, 80, and 83.

As discussed in the previous response, Lauchenauer does not teach or suggest the application of a fluid to a film of a loose and free-flowing particulate mixture, as recited in independent method claims 76, 78, and 80. Similarly, Lauchenauer does not disclose an article that is a product of a loose and free-flowing particulate mixture and a fluid, as recited in independent article claim 83. Rather, Lauchenauer, uses heat and/or pressure, not a fluid, to activate a component in a conglomeratic sheet material. *See* column 3, line 13 – 40. Moreover, Lauchenauer teaches away from the use of fluids for binding materials. Lauchenauer appears to mention fluids only with respect to the prior art, in the context of liquid adhesives being used to join two layers of a composite sheet material. *See* column 1, lines 13–16. Lauchenauer lists a number of problems associated with such bonding systems, such as the challenge in removing liquid media by evaporation while holding the objects to be joined tightly together. *See* column 1, lines 17 – 20, of Lauchenauer.

The Examiner disagrees, observing that, as mentioned above, an auxiliary agent may dissolve at least one of the interacting components of a heat activatable adhesive. The Examiner apparently considers that this mechanism is equivalent to applying a fluid to a loose and free-flowing particulate mixture, as required by the instant claims.

Applicants emphasize that Lauchenauer does not disclose applying a fluid to a plurality of loose and free-flowing particles. Rather, he forms a heat activatable sheet from discrete flowable particles and subsequently activates a component by heat and/or pressure. At the point at which the component is activated, it is adhered to the heat activatable sheet and is no longer flowable. Thus,

Lauchenauer does not and cannot disclose applying a fluid to a loose and free-flowing mixture, as required by the instant claims.

Applicants submit that claims 76, 78, 80, and 83, as well as claims dependent therefrom, are patentable for at least these reasons.

Claims 1, 2, 4, 5, 7, 9 – 11, 13 – 19, and 22 – 24 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,061,825 to Counsell et al. ("Counsell"). Counsell appears to disclose a water-activatable tape including a substrate impregnated or coated with a water-reactive cementitious composition that includes a water-sensitive additive. In a dry state of the tape, a binder binds dry cement particles to the tape. *See* abstract and column 1, lines 40 – 65. Suitable binders include organic polymeric materials. *See* column 1, line 67.

The Examiner relies on Counsell to teach all of the limitations of independent claim 1. Counsell, however, does not teach or suggest a loose and free-flowing particulate mixture including a thermoplastic particulate material and an adhesive particulate material, as required by independent claim 1. Rather, Counsell discloses a cementious composition that may include one cement, a non-water-sensitive polymeric binder, and a water-sensitive additive. *See* column 1, lines 40 – 50, of Counsell. A cementious composition applied to a tape is neither a loose and free-flowing particulate mixture.

Moreover, Counsell's composition do not include a thermoplastic material, as required by claim 1. Obviously, neither the cement nor the water-sensitive additive disclosed by Counsell is a thermoplastic material. The polymeric binder disclosed by Counsell is also not a thermoplastic particulate material of the type recited in claim 1. In particular, the polymeric binder of Counsell may be a natural or synthetic rubber, as well as certain classes of non-rubbery polymers. *See* column 1, line 67 – column 2, line 21. None of these materials is a thermoplastic of the type recited in claim 1, i.e., none of these materials is acetal polyoxymethylene, polylactide, ethylene vinyl acetate, polyphenylene ether, ethylene-acrylic acid copolymer, polyether block amide, polyvinylidene fluoride, polyetherketone, polybutylene terephthalate, polyethylene terephthalate, polycyclohexylenemethylene terephthalate, polyphenylene sulfide, polythalamide, polymethylmethacrylate, polysulfones, polyethersulfones, polyphenylsulfones, polyacrylonitrile, poly(acrylonitrile-butadiene-styrene), polyamides, polystyrene, polyolefin, polyvinyl butyral, polycarbonate, polyvinyl chlorides, ethyl cellulose, cellulose acetate, or cellulose xanthate. Thus,

Counsell does not teach or suggest a mixture of a thermoplastic particulate material and an adhesive particulate material, as required by claim 1.

Applicants submit that claim 1, as well as claims dependent therefrom, are patentable for at least these reasons.

CONCLUSION

In light of the foregoing, Applicants respectfully submit that all claims are in condition for allowance.

Applicants believe that no additional fees are necessitated by the present paper. However, in the event that any additional fees are due, the Commissioner is hereby authorized to charge any such fees to Deposit Account No. 07-1700.

If the Examiner believes that a telephone conversation with Applicants' attorney would expedite allowance of this application, the Examiner is cordially invited to call the undersigned attorney at (617) 570-1806.

Respectfully submitted,

Date: June 16, 2008
Reg. No. 44,381

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